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RUSSIAN ARSENALS

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THE ASIAN ARMS RACE SEEN FROM OPENED
UP RUSSIAN ARSENALS

Zang Xiaojing

ABSTRACT After the disintegration of the Soviet Union--in order to acquire hard currency--Russia opened up its arsenals to the people of the world, selling weapons cheap. At the same time, in Asia--due to various types of latent crises--a good number of nations, in expanding military power, competing in procurement, or independently developing weapons systems, produced the appearance of a new arms race. This article takes missiles as the main thing, introducing advanced Russian technology. In conjunction with this--using a number of nations and regions of Asia as examples--it analyzes the current status of Asian arms.

KEY TERMS Arms trade Missile Arms race

After the disintegration of the Soviet Union, the Cold War ended. In military terms, the daggers drawn confrontation of the two super powers seemed to have already been replaced by one side's "great compromise" and one side's "absolute victory". However, this certainly did not give to this world--well baptized in war--an umbrella of absolute peace and security. Speaking in basic terms, the international situation is still turbulent and unstable. On a world scale, regional clashes are still possible because of such things as religious conflicts, nationality problems, territorial questions, as well as nationalism, and so on. In particular, it is not possible to ignore latent crises in the Asian region. Recently, due to longstanding weakness in national power, Russia has experienced deep hard currency difficulties. They are in the midst of a "liquidation sale" of the weapons of the former Soviet Union. This has led directly to an abrupt increase in the quotas of weapons coming into Asian nations. In Asia--although some nations are rich and strong and are not embroiled in any directly threatening conflicts--they have, however, undertaken the responsibility of defending against various types of threats which are even more decentralized after the Cold War. Therefore, more high technology weapons are coming in. There are also some nations which face even greater risks of clashes. They are, however, certainly not very well off, and procuring weapons, for them, is an even more onerous burden. However, following along with the development of national economic and educational activities, they will more and more easily shoulder defense expenditures and have the capability of mastering high technology weapons. And then, there are a number of nations which are facing imminent danger of conflict. As a result, their weapons trade has already turned into a full blown arms race. Asia has already become a region where security is fragile and the arms trade is very lively, forming a new arms race.

1 Opened Up Russian Arsenals

At the most recent several defense expositions, Russia has displayed large quantities of the weapons of the former Soviet Union. Aircraft and weapons systems which a few years ago were strictly classified or only seen in long range photographs carried out of the former Soviet Union are now displayed openly to the public. A primary reason for it is urgent need for hard currency in the troubled Russian aviation and astronavigation industries. They have already rapidly adapted to market economics, opening up arsenals to the people of the world. At the same time, they excite people's attention. The weapons of the former Soviet Union are very advanced. The actual power of Russian arms is still very strong. One of the purposes of Russian development of cutting edge weapons is to export and acquire foreign exchange. However, speaking in basic terms, it is, however, still based on a long term point of view--building up the armed forces. Below, we begin with Russia's missiles and related systems to understand Russia's advanced technologies.

1.1 Surface to Air Missiles

--SA-10a Thunderclap Surface to Air Missile. Designated in the West as the Soviet Union's Patriot.

--SA-11 Gadfly Surface to Air Missile System. Used in order to replace the SA-6 Genfuo (phonetic) ground to air missile. It is composed of self-propelled launch vehicles, command vehicles, target acquisition radar vehicles, and reload/launch vehicles.

--SA-12 Surface to Air Missile System. Opts for the use of two types of missiles to deal with different targets. One type with a relatively long missile body is designated by NATO as the SA-12 Giant. A relatively short type is called Warrior. The system is composed of launch vehicles, command vehicles, and surveillance radars/tracking radars.

--SA-13 Jinhua (Eutamias Asiaticus Lineatus) Surface to Air Missile System. SA-13 is capable of engaging targets at under 3000m within 5km. Operators are capable of selecting fire and forget type or manually guided aiming line modes.

--SA-15 Tuyan (Precipice) Surface to Air Missile System. It possesses a new rotating type of launching tower. Surveillance and tracking radars are on the launch tower. 8 vertical launch missiles are capable of engaging targets inside 12km at altitudes of 10-6000m. The missiles have a proximity fuse detonated high explosive combat section.

--SA-19 Surface to Air Weapons System. It is capable of intercepting all aerial targets flying at altitudes of 15m-22km. Missile range is 200-8000m. Opting for the use of semi-independent guidance (laser and/or infrared), the combat section is detonated by a proximity fuse. The length of the missile is approximately 2m. Missile diameter is 150mm.

1.2 Air to Surface Missiles

--AS-6 The AS-6 Kingfish (Wangyu) supersonic air to surface missile was the first bait model Russia displayed. This system is calculated for use in air defense suppression.

--AS-7 Black Ox (Heiniu) (kh-23) Opts for the use of radio command guidance. Pilots track the missile through observing electroptical tubes on the tail section of the missile to carry out manual control. Missile length is 3.53m. Maximum range is 8km.

--AS-9 (illegible) (kh-28) According to reports, kh-28's have 3 types of guidance head assemblies. They are used, respectively, at 3 sets of frequency bands on land and sea. Guidance heads are capable of opting for the use of omnidirectional frame forms, making airborne launcher ranges even larger.

--AS-10 Kelun (kh-25) The propulsion system is in the middle section of the missile body. The tail section is fitted with a directional antenna. Option is made for the use of laser or radio command guidance. Standard range is 10km.

--AS-11 (kh-58) It is a type of large model antiradiation missile propelled by solid rocket motors. There are three models--

kh-58, kh-58E, and kh-58u. It is said that there is another nuclear model. However, that has not been confirmed.

--AS-12 Pitcher (Touqiushou) (kh-25MP) This is an antiradiation model of the kh-25 series. It was the smallest antiradiation missile of the former Soviet Union. It has been designed for high altitude launches in order to let the launching aircraft stay outside the range of enemy air defense missiles. Maximum range is 35km.

--AS-13 (kh-59) This is one type of large model photoelectric guidance missile propelled by solid rockets. When it was /10 displayed, the APK-9 suspension module was also displayed along side the kh-59. This is very likely a data link nacelle used to lock onto the missile after long range launch.

--AS-14 Kedge (Xiaomao) (kh-29) It does not opt for the use of conventional laterally arranged gas engine jet nozzles but opts for the use of single tail jet nozzles. Nose sections have a semi-independent laser guidance head. It is also capable of having television guidance or infrared imagery guidance head models.

--AS-15 Pole (Chenggan) The nose section structure possesses stealth characteristics. In order to reduce RCS, the front section module is redesigned.

--AS-16 is a type of inertial guidance missile carrying small model nuclear warheads. Performance is equivalent to the U.S. Air Force SRAM.

--AS-17 (kh-31) is a type of supersonic antiradiation missile.

Option is made for the use of integrated rocket/ram engines. As far as the AS-17 krypton is concerned, option is made for the use of passive radar homing methods. Besides this, they are also used in order to suppress hostile aerial firepower or used in modified models associated with operations against ships.

--AS-18 Performance is similar to the U.S. AGM-34E SLAM. The range is 115km. It is capable of carrying 320kg armor piercing warheads. It is used in order to attack hard targets and is also capable of mounting 280kg weights associated with shaped charges.

--Vikhr is a new model laser guided antitank missile. Option is made for the use of laser guidance beams and non active laser homing. Maximum range is 8km. Sets of 8 missiles are hung under aircraft wings.

--S-25 is a type of large model air to surface rocket series.

They are installed in launch boxes. Each box is equipped with one missile. The S-25L is a guided model in this series. It makes use of semi-independent laser homing guidance heads.

1.3 Antiship Missiles

--X-35 High Subsonic Speed Antiship Missile. Option is made for the use of air breathing type engines as well as solid boosters. The exterior shape is similar to the U.S. AGM-84 Harpoon. Option is made for the use of folding missile wings. The guidance system is middle phase inertial guidance with the addition of active radar terminal homing. Maximum range is 150km. Cruising speed is 300m/s. On the basis of the condition of the sea, it is

capable of flying nap of the sea at altitudes of 3-5m.

--X-31A is the antiship model of the AS-17 Krypton. Option is made for the use of integrated rocket/ram jet engine propulsion systems. Cruising speed is $Ma=3.5$.

--Alpha Basically, this is a type of cruise missile with a 200km range. It opts for the use of inertial and active radar homing guidance methods. One of its novel characteristics is that, during intermediate subsonic flight phases, it makes use of flat straight wings. During supersonic speed attack phases, it retracts or jettisons the wings in question.

--SS-N-15/16 These missiles are designed to be launched from a 53cm ship or submarine torpedo tube. Assisted by rocket engines, they break through the surface of the water. In conjunction with that, they climb to predetermined angles in order to release their 742kg homing torpedos in the direction of the target submarine vicinity during flight along the trajectory.

--Ru-85 is a type of ship launched/coast launched multirole antisubmarine and antimissile system. It may possibly be an improvement of the SS-N-4. Range is 50km. Speed is $Ma=0.95$. Nap of the sea flight or flight at 400m altitudes.

--3M-80 is a type of supersonic ship to ship missile. During launch, they possess deviation capabilities of $\pm 60^\circ$. They are capable of 7-20m low altitude flight. Option is made for the use of integrated type ram engines. Ranges can reach 90km. Maximum cruising speeds can reach $Ma=2.3$. /11

--Sandfly The ASM-MSS Sandfly is a type of air launched 3M-80. The missiles in question are very large. (illegible) aircraft can only carry one missile.

--X-65SE is a type of antiship cruise missile. It possesses "stealth" nose structures similar to the Tomahawk cruise missile. At 40-110m heights during flights at speeds of $Ma=0.48-0.77$, range is 250-280km. During cruise phases, option is made for the use of inertial guidance. Terminal phases opt for the use of active radar guidance heads.

--X-15C is a conventional version of the AS-16 krypton supersonic cruise missile. By solid rocket motor propulsion, during flight, it is capable of climbing to altitudes of 40000m. During terminal dives, speeds are capable of reaching $Ma=5$. Maximum ranges can reach 40-150km.

--Kh-58 is a type of antiship model of the Kh-58 air to ground missile. It relies on intermediate inertial guidance and terminal phase radar homing. It is said that it is the first missile in Russian service to carry millimeter wave guidance heads.

--P-80 is a type of large model antiship missile with even greater power. Flight speeds do not differ much from the 3M-80. However, warhead masses can reach 40kg. Ranges are 130-250km. They are equipped with advanced inverse synthetic aperture radar which is capable of sending back imagery of predetermined targets to the launch point. Gunners are able to confirm or supercontrol pretermned targets.

1.4 Air to Air Missiles

--RVV-AE This active radar guided medium range air to air

missile is similar to the U.S. AMRAAM. Maximum range is 80km. It is capable of attacking a maximum of 129 mobile targets (illegible). Its obvious special characteristic is a grid shaped tail rudder. The front has no control wings. As far as the guidance system is concerned, option is made for the use of inertial control, radio calibration, and active guidance head control.

--AAM-L is a follow on version to the AA-9 Amos. This is a type of super long range air to air missile. Option is made for the use of solid boosters added to the main motors. Maximum range is 400km. Combat altitudes can reach 30km. In terminal phases, option is made for the use of active radar guidance heads. In intermediate phases, option is made for the use of inertial and mid guidance corrections. It possesses capabilities for omnidirectional, all azimuth target intercept.

--R-37 This is a modified model of the R-33 (NATO designation AA-9 Amos) with greatly increased range. It is one of the most advanced air to air missiles. It is capable of adding a booster. Range is approximately 400km.

--R-73 Also called the AA-11/Archer (NATO designation). It is a short range missile with good maneuverability. It is primarily used in short range aerial dogfights (day or night), intercepting aircraft maneuvering in flight, as well as cruise missiles, and so on.

--2S6 Tungus Self-Propelled Air Defense System. Used to replace the original ZSU-23-4 self-propelled antiaircraft gun. The 2S6 antiaircraft system has four 30mm antiaircraft guns and 8 SA-19 surface to air missiles. In conjunction with this, it is fitted with surveillance and tracking radars.

--Beetle Multiple Function Airborne Radar. It has look up and look down modes as well as terrain tracking functions and terrain mapping capabilities (real wave or synthetic aperture). In air to air modes, it is capable of side scan side track, simultaneously attacking multiple targets.

--Kopyo Multiple Function System. It is capable of being installed on fighter aircraft with limited internal space. It possesses air to air and air to surface modes. It includes mapping and side scan side track capabilities. Detection range is 50km. Acquisition range is 35km.

--Malachite Unmanned Aircraft System. Malachite is a type of tracked vehicle. It acts as the launch and control station for unmanned reconnaissance planes. This type of unmanned aircraft /12

is launched from guide rails. There are two solid rocket boosters.

Continuous flight time is 2h. Cruising speed is 140km/h.

--A-50AWACS Aircraft. This is a type of early warning aircraft. Besides standard rotating antenna covers, The under section of the nose and the belly of the fuselage also have radar antenna covers, in flight refueling tubes, decoy missiles and flashlight shell dispersers. At the front and back of the fuselage, there are also various types of electronic support

measure antenna covers.

--YAK-141V/STOL Fighter. It is the only supersonic one of these fighters in the world at the present time. The prototype was displayed at Fanbaoluo (phonetic). The purpose was to attract investment.

--SU-24MR All Weather, Day/Night Reconnaissance Plane. It is basically an improved SU-24. A series of sensors are loaded in suspended modules. There are two 3000 l auxilliary fuel tanks and two R-60 missiles under the wings.

--AN-72P STOL Aircraft. This type of aircraft is equipped with two turbofan engines. It carries out patrol and surveillance missions.

--AN-70T Aircraft. An AN-70T aircraft model equipped with four engines was displayed at the Moscow Exhibition. This type of aircraft opts for the use of counter rotating puller propellers. Tare weight is 123t. Maximum speed is 750km/h.

--Pantzyr-S1 Air Defense System. It is very similar to a vehicle mounted Roland system. However, performance is better. The Pantzyr-S1 gun turret is mounted on the rear section of the vehicle. Gun turret mounts 12 surface to air missiles, two 30mm guns, and 750 rounds of ammunition.

--Plasma Weapons. Russia is in the midst of developing a type of ground based microwave weapon. It destroys the warheads of incoming missiles through plasma produced in the atmosphere, thereby destroying ballistic missiles in flight.

2 The New Asian Arms Race

Russia hopes to be able to sell its advanced missile systems--including those systems which have just now begun development at the present time in order to acquire hard currency which is in short supply. Russia is in the midst of increasing step by step its arms exports to a number of Asian nations. Latent crises exist in this area. A good number of former colonial nations look on the modernization of defense as proof of the possession of national sovereignty. A new arms race has appeared in Asia. In 1991, the weapons imports of Asian nations accounted for 35% of the principal weapons imports of the world, surpassing the entire amount of weapons imports for all the nations of Europe. According to reports, Asian trade expansion accounts for 34% of the entire global amount. At the present time, it is still difficult to predict how long the Asian arms race will continue to escalate. A good number of Asian nations already possess advanced missiles and weapons systems. No matter whether it is through development by the nation itself or they are entirely procured, it is still a path through which technology is shared.

2.1 Taiwan

Surface to air missiles which Taiwan possesses include Nike, Hawk, Xiaojiaoshu, and RBS-70. As far as surface to surface missiles are concerned, these include Qingfeng and Tianma. Nike missiles will be replaced before long by SKYBOW surface to air missiles. SKYBOW is very similar to the Patriot surface to air missile. It opts for the use of a number of Patriot technologies

and components.

Recently, the U.S. has already agreed to sell Taiwan shoulder fired air defense missiles, Harpoon type antiship missiles, as well as Lamu (phonetic) missiles.

Taiwan is in the midst of carrying out missile development projects as follows.

/13

--Qingfeng Missiles A type of surface to surface ballistic missile. Declassified 1981. Already in production. Very like the U.S. MGM-52 Lance. However, the diameter is slightly larger (60cm). Length 7m. Small tail fins. Active radar guidance.

--Tianma (Sky Horse) I Missiles. A type of surface to surface missile. A possible follow on to the Qingfeng. Estimated range 1000km.

--Tianjian (Sky Sword) I/II Missiles. Tianjian I's are infrared guidance intermediate range air to air missiles. They are very similar to the U.S. Sidewinder. At the present time, development is also being made of another type of intermediate range air to air missile named Tianjian II.

--Tiangong (Sky Bow) I/II Missiles. The performance of the Tiangong I is not much different from the improved Hawk and the Patriot. The Tiangong II opts for the use of solid rocket ram engines. Tiangong's have already been test produced. In conjunction with that, the development of Tiangong III is under consideration.

According to reports, the personage Rilinuofusiji (phonetic: probably Jironovsky), who is the subject of controversy in Russia and even the world, advocates the sale of advanced weapons to Taiwan. He believes that Russia's arms sale policies should be vigorous and should not be limited by the U.S. or any other nation.

Russia should take Taiwan off the arms sales forbidden list and sell them advanced weapons, capturing an arms sale market in East Asia for Russia.

In actuality, Taiwan had already, early on, procured military technology and products from Russia. Moreover, Russia also dispatched specialist personnel to guide Taiwan's military technology.

2.2 North Korea

At the present time, the area most worthy of attention is North Korea's being in the midst of implementing ballistic missile development projects. North Korea's missiles may possibly come from the former Soviet Union's FROG-5, FROG-7, and SCUD-B missiles, as well as a SCUD-C derivative with 600km range improved by North Korea. At the present time, the development of the Nodong I missile with a range of 1000km is already completed. The Nodong II with a range of 1300km is under development. According to conjectures, the Nodong III ballistic missile--self-styled as a "material atomic bomb"--has a range of 1500km.

2.3 South Korea

In November 1992, South Korea and Russia signed a memorandum of agreement for the procurement of S-300 weapons systems. There were also preparations to jointly produce a South Korean model of

the Russian weapons system. It is reported that the performance of the S-300 system is better than the U.S. Patriot missile.

In early 1990, South Korea put forward plans for the autonomous development of surface to air missiles in order to replace the Nike surface to air missiles currently in service and the development of theater surface to surface missiles in order to replace the Honest John missiles and MGM-52 Lance missiles purchased from the U.S. In independent surface to air missile development projects are included the production of Ma=(illegible) missiles. The entire missiles are very similar to Sidewinder surface to air missiles. The missiles in question opt for the use of ram engine propulsion and flight maneuver methods, semi-independent homing, and infrared proximity fuses. The prototype for this type of missile--called SAM-X--carried out its initial launch tests in the last half of 1990. The surface to surface missile project (SSM-X project) includes development plans for ballistic missiles with ranges of 100-900km--aimed primarily at North Korean FROG-3, FROG-5, FROG-7, and SCUD-B's. SSM-X mount conventional warheads. Optimization was carried out aimed at areas associated with penetration capabilities against North Korean underground concrete tank shelters and the destruction of their C3I network.

2.4 Japan

At the present time, domestically manufactured missiles produced by Japan include model 81 short range air defense missiles, model 79 and 87 antitank missiles, model 80 air to surface missiles, and model 88 surface to surface missiles. Missiles produced under license include Patriot surface to air missiles, improved Hawk models of intermediate range air defense missiles, Sparrow-3 and Sidewinder air to air missiles, as well as ceramic type antitank missiles. Missiles imported from the U.S. include Harpoon missiles, Standard shipborne intermediate range /14

air defense missiles, and Needle portable surface to air missiles.

Japan has 5 types of antiship missiles--ASM-1 air to ship model (ASM-2 air to ship model), SSM-1 coast to ship model, XASM-2 air to ship model, XSSM-1B ship to ship model, and XASM-1C air to ship model. At the present time, Japan is in the midst of developing and test manufacturing future air to ship missiles. On the foundation of the ASM-1 air to ship missile (inertial guidance and active radar) as well as air to ship missiles ASM-2 mounted in 1993 (inertial guidance plus infrared imagery), it is planned for development of air to ship missiles to opt for the use of composite active/passive radar homing and infrared imagery homing guidance methods. Development plans also include the introduction of antiradiation missiles (AGM-88), replenishing the antiship missile equipment systems of the aviation self-defense forces. The next step planned is to develop a type of medium range surface to air missile, planned to replace the Hawk early in the next century. It is also planned to develop air to air missile AAM-3 to replace the Sparrow AIM-9L/M. In 1993, development began on the XATM-5 light model antitank missile.

Due to North Korea's development of ballistic missiles with long ranges, most of the western part of Japan lies within the range fan of this type of missile. As a result, Japan plans to develop ballistic missile defense systems in order to protect the Japanese archipelago from missile threats--in particular, to deal with the North Korean Nodong I missile's 1000km range. It is reported that Japan may make use of the deployment of theater missile defense systems similar to the U.S. "theater high altitude defense" weapons (THAAD).

2.5 India

Very early on, India signed an Indian-Soviet treaty of friendship and cooperation with the former Soviet Union and has already purchased a good number of advanced weapons of the former Soviet Union--such as, AS-7, SA-(illegible), as well as 2S6 systems and so on. At present, they are still considering buying Russia's newest model T-80U tank. At the present time, field tests of the T-80U tank are being carried out in the northern region. Russia also plans to sell its newly developed Kh-35 air to ship missile to India.

Recently--in order to acquire self-sufficient capabilities in the key area of missile technology--India's national defense department approved a general missile development plan. Their development projects include two types of conventional medium range ballistic missiles, two types of surface to air missiles, one type of antitank missile, and one type of air to air missile. India's development of missile technology is very rapid. The medium range "Pulitewei (phonetic)" surface to surface missile successfully completed tests under battlefield conditions in 1993. Moreover, it is on the verge of being deployed. It is a type of liquid missile.

When combat section mass is 250kg, the range is 250km. Carrying a warhead weighing 1000kg, the range is, by contrast, 150km. The Agni is a type of medium range ballistic missile. Maximum range is 2500km. According to reports, if Agni type missiles are launched from the northeastern part of India, they are capable of hitting Beijing with a useful load of 1t. Missiles which India is just in the process of developing or has already put into service include the Trishul low altitude surface to air missile, Akash low-medium altitude surface to air missile, and the Nag antitank missile with a range of 4km and a capability for top attacks. India has already decided to carry out commercial production of unmanned target aircraft designated "Targets". These types of India's newest weapons systems mean that India has already mastered technologies associated with the development of cruise missiles.

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